

Appl. No. 09/727,098
Amd. Dated March 3, 2005
Reply to Office Action of January 28, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method for operating a selected router of a network, the router performing per-session load balancing where all packets of a session are sent over a same active path, the method comprising:

configuring a per-session load balancing algorithm to reduce correlation of distribution of sessions among the active paths at the selected router relative to distributions of sessions among the active paths of said per-session load balancing algorithm at other routers of said network; and

assigning packets arriving at said selected router to a path according to said per-session load balancing algorithm.

Claim 2 (original): A method as in claim 1 wherein the load balancing algorithm has multiple parameters and wherein configuring the load balancing algorithm includes steps of:

selecting a random value; and

setting one of the multiple parameters of the load balancing algorithm to be the random value.

Claim 3 (previously presented): A method as in claim 2 further including:
monitoring the load balancing of packets for unacceptable performance;
if there is unacceptable performance, reconfiguring the load balancing algorithm by setting the one of the multiple parameters to a different random value.

Claim 4 (original): A method as in claim 1 further including:
monitoring the load balancing of packets for unacceptable performance;
if there is unacceptable performance, reconfiguring the load balancing algorithm by setting the one of the multiple parameters to a unique value.

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Claim 5 (original): A method of load balancing a packet at a router using per-session load balancing comprising:

- receiving a packet at a router having an associated identifier;
- obtaining a source address and a destination address of the packet;
- selecting an output path according to a load balancing algorithm that uses the associated identifier, the source address, and the destination address as inputs;
- sending the packet to an output interface associated with the selected output path.

Claim 6 (original): A method as in claim 5 wherein a look-up table that is configured using the associated identifier is used in the step of selecting.

Claim 7 (original): A method as in claim 6 wherein the look-up table is configured at a set-up time of the router.

Claim 8 (original): A method as in claim 6 wherein the look-up table is a randomized hash look-up table.

Claim 9 (original): A method as in claim 8 wherein the randomized hash lookup table is configured by performing steps of:

- creating an initial hash table having a plurality of rows;
- seeding a random number generator with the associated identifier;
- obtaining a next random number and another next random number from the random number generator;
- swapping a row associated with the next random number and a row associated with the another next random number;
- repeating the steps of obtaining and swapping a preset number of times.

Claim 10-21 (canceled)

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Claim 22 (previously presented): A method for configuring a portion of a packet switched network to reduce load balancing polarization comprising:

selecting a router from a plurality of routers of a same model included in a portion of a network, each of said plurality of routers having a same load balancing algorithm; and

setting said router to have a different load balancing algorithm from another of the plurality of routers.

Claim 23 (previously presented): A method for configuring a portion of a packet switched network to reduce load balancing polarization comprising:

selecting a router from a plurality of routers of a same manufacturer included in a portion of a network, each of said plurality of routers having a same load balancing algorithm; and

setting said router to have a different load balancing algorithm from another of the plurality of routers.

Claim 24 (original): A system for load balancing a packet at a router comprising:

means for receiving a packet at a router having an identifier;

means for obtaining a source address and a destination address of the packet;

means for determining an output path according to a load balancing algorithm that depends on the identifier, the source address, and the destination address;

means for routing the packet to the output path.

Claim 25 (canceled)

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Claim 26 (previously presented): A system for operating a selected router of a network by per-session load balancing where all packets of a session are sent over a same active path, the method comprising:

means for configuring a per-session load balancing algorithm to de-correlate distribution of traffic among the active paths at said selected router relative to distribution of traffic among the active paths by said per-session load balancing algorithm at other routers of said network; and

means for load balancing packets arriving at said selected router according to said per-session load balancing algorithm.

Claim 27 (currently amended): A computer program product for operating a selected router of a network, the router performing per-session routing where all packets of the session are sent over a same active path, comprising:

computer code that configures a per-session load balancing algorithm to reduce correlation of distribution of sessions among the active paths at the selected router relative to distributions of sessions among the active paths of said per-session load balancing algorithm at other routers of said network; and

computer code that routes packets arriving at said selected router according to said per-session load balancing algorithm; and

a computer readable medium that stores the computer code.

Claim 28 (original): The computer program product of claim 27, wherein the computer readable medium is a CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, or data signal embodied in a carrier wave.

Claim 29 (original): A computer program product for routing a packet at a router using per-session routing comprising:

computer code that receives a packet at a router having an associated identifier;

computer code that obtains a source address and a destination address of the packet;

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computer code that selects an output path according to a load balancing algorithm that uses the associated identifier, the source address, and the destination address as inputs;

computer code that load balances the packet to the selected output path; and
a computer readable medium that stores the computer code.

Claim 30 (original): The computer program product of claim 29, wherein the computer readable medium is a CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, or data signal embodied in a carrier wave.

Claim 31-32 (canceled)